

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A user interface control, comprising:
a touchpad control having a touch-sensitive surface comprising the shape of an arc, the arc divided into a first region and a second region by a dividing boundary, the first region associated with a first function having a plurality of different degrees of said first function, each degree of the first function associated with a corresponding relative distance within the first region from the dividing boundary, ~~wherein the touchpad control is configured to detect a touch within the first region and to select the first function and an associated degree of the first function corresponding to the relative distance of the touch from the dividing boundary within the first region~~ and the second region associated with a second function having a plurality of different degrees of said second function, each degree of the second function associated with a corresponding relative distance within the second region from the dividing boundary, the second function being an opposite function of the first function,

wherein the touchpad control is configured to detect a touch within the first region or the second region, and to select the first function and an associated degree of the first function corresponding to the relative distance of the touch from the dividing boundary upon detecting the touch in the first region, and to select the second function and an associated degree of the second function corresponding to the relative distance of the touch from the dividing boundary upon detecting the touch in the second region.
2. (Original) A user interface control according to claim 1, wherein the arc is of substantially uniform width.
3. (Previously Presented) A user interface control according to claim 2, wherein the touchpad control is substantially in the shape of a quarter circle.
4. (Original) A user interface control according to claim 1, wherein the arc is at least one of (A) thinner than at least one end of the arc at the middle of the arc and (B) thicker than at least one end of the arc at the middle of the arc and the arc includes at least one of (C) a curved end and (D) a substantially straight end.

5. (Previously Presented) A user interface control according to claim 1, wherein the dividing boundary between said first region and said second region is substantially about the middle of the arc.
6. (Canceled)
7. (Canceled)
8. (Currently Amended) A user interface control according to claim ~~[[6]]~~ 1, wherein at least one of said first function and said second function includes varying degrees of function for at least one of Escape, Start, Options, More, Less OK, Back, Forward, Play, Pause, Up, Down, Fast Forward, Reverse, Skip Forward, Skip Backwards, Menu, Left, Right, Mute, Volume Up, Volume Down, Raise Light and Lower Light functionalities.
9. (Currently Amended) A user interface control according to claim ~~[[6]]~~ 1, wherein the degree of function of at least one of said first function and said second function is determined based upon a distance of an input in said first region of control from the center line of the touch pad arc.
10. (Currently Amended) A user interface control according to claim ~~[[6]]~~ 1, wherein the degree of function of at least one of said first function and said second function is determined based upon at least one of (A) a velocity and (B) an acceleration associated with an input to the user interface control calculated from recent historical interaction with the user interface control.
11. (Original) A user interface control according to claim 1, wherein said arc is substantially in the form of a curved cavity in the surface of a device including the user interface control.
12. (Previously Presented) A user interface control according to claim 1, implemented in any of a portable media player, a remote control for a computing device, a computing device, a swappable component of a computing device and a component for augmenting a computing device.

13. (Currently Amended) A user interface control implemented in a surface of a device, comprising:

a touchpad control comprising a touch-sensitive surface comprising the form of a curved cavity of the surface, the curved cavity divided into a first region and a second region by a dividing boundary, the first region associated with a first function having a plurality of different degrees of said first function, each degree of the first function associated with a corresponding relative distance within the first region from the dividing boundary, ~~wherein the touchpad control is configured to detect a touch within the first region and to select the first function and an associated degree of the first function corresponding to the relative distance of the touch from the dividing boundary within the first region and the second region~~ associated with a second function having a plurality of different degrees of said second function, each degree of the second function associated with a corresponding relative distance within the second region from the dividing boundary, the second function being an opposite function of the first function,

wherein the touchpad control is configured to detect a touch within the first region or the second region, and to select the first function and an associated degree of the first function corresponding to the relative distance of the touch from the dividing boundary upon detecting the touch in the first region, and to select the second function and an associated degree of the second function corresponding to the relative distance of the touch from the dividing boundary upon detecting the touch in the second region.

14. (Original) A user interface control according to claim 13, wherein the curved cavity is of substantially uniform width.

15. (Original) A user interface control according to claim 14, wherein the curved cavity is substantially in the shape of a quarter circle.

16. (Original) A user interface control according to claim 13, wherein the curved cavity is at least one of (A) thinner than at least one end of the curved cavity at the middle of the curved cavity and (B) thicker than at least one end of the curved cavity at the middle of the

curved cavity and the curved cavity includes at least one of (C) a curved end and (D) a substantially straight end.

17. (Previously Presented) A user interface control according to claim 13, wherein the dividing boundary between said first region and said second region is substantially about the middle of the curved cavity.

18. (Canceled)

19. (Canceled)

20. (Currently Amended) A user interface control according to claim ~~[[18]]~~ 13, wherein at least one of said first function and said second function includes varying degrees of function for at least one of Escape, Start, Options, More, Less OK, Back, Forward, Play, Pause, Up, Down, Fast Forward, Reverse, Skip Forward, Skip Backwards, Menu, Left, Right, Mute, Volume Up, Volume Down, Raise Light and Lower Light functionalities.

21. (Previously Presented) A user interface control according to claim ~~[[18]]~~ 13, wherein the degree of function of at least one of said first function and said second function is determined based upon a distance of an input in said first region of control from the center line of the touch pad curved cavity.

22. (Previously Presented) A user interface control according to claim ~~[[18]]~~ 13, wherein the degree of function of at least one of said first function and said second function is determined based upon at least one of (A) a velocity and (B) an acceleration associated with an input to the user interface control calculated from recent historical interaction with the user interface control.

23. (Previously Presented) A user interface control according to claim ~~[[13]]~~ 13, implemented in any of a portable media player, a remote control for a computing device, a computing device, a swappable component of a computing device and a component for augmenting a computing device.

24. (Currently Amended) A method for interacting with a user interface control including a touchpad control comprising a touch-sensitive surface comprising the shape of an arc or a curved cavity divided into a first region and a second region by a dividing boundary, the first region associated with a first function having a plurality of different degrees of said first function, each degree of the first function associated with a corresponding relative distance within the first region from the dividing boundary, ~~wherein the touchpad control is configured to detect a touch within the first region and to select the first function and an associated degree of the first function corresponding to the relative distance of the touch from the dividing boundary within the first region and the second region associated with a second function having a plurality of different degrees of said second function, each degree of the second function associated with a corresponding relative distance within the second region from the dividing boundary, the second function being an opposite function of the first function, wherein the touchpad control is configured to detect a touch within the first region or the second region, and to select the first function and an associated degree of the first function corresponding to the relative distance of the touch from the dividing boundary upon detecting the touch in the first region, and to select the second function and an associated degree of the second function corresponding to the relative distance of the touch from the dividing boundary upon detecting the touch in the second region, the method comprising:~~

receiving a touch input to the ~~first region of the touchpad control;~~
determining whether the touch input is to the first region or the second region;
upon determining the touch input is in the first region, determining a location on the first region of the touchpad control and a corresponding degree of the first function associated with the location which corresponds to the relative distance of the location within the first region from the dividing boundary, [[:]] and outputting at least one of at least one first function call and at least one first signal based upon the location and degree of the first function associated with the location; and

upon determining the touch input is in the second region, determining a location on the second region of the touchpad control and a corresponding degree of the second function associated with the location which corresponds to the relative distance of the location within the second region from the dividing boundary, and outputting at least one of at least one

second function call and at least one second signal based upon the location and degree of the second function associated with the location.

25. (Currently Amended) A method according to claim 24, further comprising:
performing the first function to the corresponding degree ~~in accordance with~~ upon receipt of said at least one of at least one first function call and at least one first signal; and
performing the second function to the corresponding degree upon receipt of said at least one of at least one second function call and at least one second signal.

26. (Currently Amended) A method according to claim 24, wherein said first region location determining step includes determining a distance of the touch input within the first region from the dividing boundary of the touchpad control, and said second region location determining step includes determining a distance of the touch input within the second region from the dividing boundary of the touchpad control.

27. (Original) A method according to claim 24, wherein said determining includes determining at least one of (A) a velocity and (B) an acceleration associated with the input based upon data associated with recent historical interaction with the user interface control.

28. (Previously Presented) A method according to claim 24, wherein the dividing boundary between said first region and said second region is substantially about the middle of the arc or the curved cavity.

29. (Canceled)

30. (Canceled)

31. (Currently Amended) A method according to claim ~~[[29]]~~ 24, wherein at least one of said function and said second function includes varying degrees of functionality for at least one of Escape, Start, Options, More, Less OK, Back, Forward, Play, Pause, Up, Down, Fast Forward, Reverse, Skip Forward, Skip Backwards, Menu, Left, Right, Mute, Volume Up, Volume Down, Raise Light and Lower Light functionalities.

32. (Currently Amended) A computer readable medium comprising computer executable instructions for interfacing with a user interface control including a touchpad control comprising a touch-sensitive surface comprising the shape of an arc or a curved cavity divided into a first region and a second region by a dividing boundary, the first region associated with a first function having a plurality of different degrees of said first function each degree of the first function associated with a corresponding relative distance within the first region from the dividing boundary, ~~wherein the touchpad control is configured to detect a touch within the first region and to select the first function and an associated degree of the first function corresponding to the relative distance of the touch from the dividing boundary within the first region and the second region associated with a second function having a plurality of different degrees of said second function, each degree of the second function associated with a corresponding relative distance within the second region from the dividing boundary, the second function being an opposite function of the first function, wherein the touchpad control is configured to detect a touch within the first region or the second region, and to select the first function and an associated degree of the first function corresponding to the relative distance of the touch from the dividing boundary upon receiving the touch in the first region, and to select the second function and an associated degree of the second function corresponding to the relative distance of the touch from the dividing boundary upon receiving the touch in the second region,~~ the executable instructions comprising instructions for performing a method comprising:

receiving a touch input to the ~~first region of the~~ touchpad control;
determining whether the touch input is to the first region or the second region;
upon determining the touch input is in the first region, determining a location on the first region of the touchpad control and a corresponding degree of the first function associated with the location which corresponds to the relative distance of the location within the first region from the dividing boundary, ~~[[;]]~~ and outputting at least one of at least one first function call and at least one first signal based upon the location and degree of the first function associated with the location; and
upon determining the touch input is in the second region, determining a location on the second region of the touchpad control and a corresponding degree of the second function associated with the location which corresponds to the relative distance of the location within

the second region from the dividing boundary, and outputting at least one of at least one second function call and at least one second signal based upon the location and degree of the second function associated with the location.

33. (Currently Amended) A computing device comprising:

a processor;

a user interface control including a touchpad control comprising a touch-sensitive surface comprising the shape of an arc or a curved cavity, the arc or curved cavity comprising a first region, the first region associated with a first function having a plurality of different degrees of said first function each degree of the first function associated with a corresponding relative position within the first region, ~~wherein the touchpad control is configured to detect a touch within the first region and to select the first function and an associated degree of the first function corresponding to the relative distance of the touch from the dividing boundary within the first region~~ and the second region associated with a second function having a plurality of different degrees of said second function, each degree of the second function associated with a corresponding relative distance within the second region from the dividing boundary, the second function being an opposite function of the first function, wherein the touchpad control is configured to detect a touch within the first region or the second region, and to select the first function and an associated degree of the first function corresponding to the relative distance of the touch from the dividing boundary upon receiving the touch in the first region, and to select the second function and an associated degree of the second function corresponding to the relative distance of the touch from the dividing boundary upon receiving the touch in the second region;

memory communicatively coupled with said processor and user interface control, said memory comprising computer executable instructions for performing the following:

receiving a touch input to the ~~first region of the touchpad control;~~

determining whether the touch input is to the first region or the second region;

upon determining the touch input is in the first region, determining a location on the first region of the touchpad control and a corresponding degree of the first function associated with the location which corresponds to the relative distance of the location within the first region from the dividing boundary, ~~[[;]]~~ and outputting at least one of at least one first

function call and at least one first signal based upon the location and degree of the first function associated with the location; and

upon determining the touch input is in the second region, determining a location on the second region of the touchpad control and a corresponding degree of the second function associated with the location which corresponds to the relative distance of the location within the second region from the dividing boundary, and outputting at least one of at least one second function call and at least one second signal based upon the location and degree of the second function associated with the location

34. (Currently Amended) A computer readable medium including computer executable modules having computer executable instructions for providing control support to a touch pad, the modules comprising:

a detection component for detecting where touch pad input of a touch pad is received, whereby the touch pad is divided into a first region and a second region substantially about an orthogonal center line of the touch pad, the first region associated with a first function with locations within the first region corresponding to differing degrees of the first function, each degree of the first function associated with a corresponding relative distance within the first region from the orthogonal center line of the touch pad, the second region associated with a second function with locations within the second region corresponding to differing degrees of the second function, each degree of the second function associated with a corresponding relative distance within the second region from the orthogonal center line of the touch pad; and

an output component for outputting a functional result, whereby if input is received in the first region, a functional result of the first function is output by said output component in an amount corresponding to the degree associated with the location of the touch pad input, and whereby if input is received in the second region, a functional result of the second function is output by said output component in an amount corresponding to the degree associated with the location of the touch pad input.

35. (Original) A computer readable medium according to claim 34, wherein the touch pad is at least one of (A) substantially in the shape of an arc and (B) substantially in the form of a curved cavity in a surface.

36. (Previously Presented) A processing subunit of a computing device for providing control support to a touch pad, comprising:

a detection component for detecting where touch pad input of a touch pad is received, whereby the touch pad is divided into a first region and a second region substantially about middle of the touch pad, the first region associated with a first function with locations within the first region corresponding to differing degrees of the function in an amount corresponding to the degree associated with the location of the touch pad input, the second region associated with a second function with locations within the second region corresponding to differing degrees of the function in an amount corresponding to the degree associated with the location of the touch pad input; and

an output component for outputting a functional signal, whereby if input is received in the first region, a functional signal of the first function is output by said output component, and whereby if input is received in the second region, a functional signal of the second function is output by said output component.

37. (Original) A processing subunit according to claim 36, wherein the touch pad is at least one of (A) substantially in the shape of an arc and (B) substantially in the form of a curved cavity in a surface.

38. (Currently Amended) A computing device having a user interface control including a touchpad control comprising a touch-sensitive surface comprising the shape of an arc or a curved cavity, the arc or the curved cavity divided into a first region and a second region by a dividing boundary, the first region associated with a first function having a plurality of different degrees of said first function, each degree of the first function associated with a corresponding relative distance within the first region from the dividing boundary, and the second region associated with a second function having a plurality of different degrees of said second function, each degree of the second function associated with a corresponding relative

distance within the second region from the dividing boundary, wherein the touchpad control is configured to detect a touch within the first region and to select the first function and an associated degree of the first function corresponding to the relative distance of the touch from the dividing boundary within the first region, wherein the touchpad control is configured to detect a touch within the second region and to select the second function and an associated degree of the second function corresponding to the relative distance of the touch from the dividing boundary within the second region, comprising:

means for detecting input to the first region and the second region of the touchpad control;

means for determining a location on the first region of the touchpad control and a corresponding degree of the first function associated with the location within the first region, and for determining a location on the second region of the touchpad control and a corresponding degree of the second function associated with the location within the second region; and

means for outputting at least one of at least one function call and at least one signal based upon the location and corresponding degree of the first function or the second function associated with the location.

39. (Previously Presented) A computing device according to claim 38, further comprising:

means for functioning to the corresponding degree of the first function or the second function associated with the location in accordance with said at least one of at least one function call and at least one signal.

40. (Original) A computing device according to claim 38, wherein said means for determining includes calculating a distance of the input from a center line of the touchpad control.

41. (Original) A computing device according to claim 38, wherein said means for determining includes means for determining at least one of (A) a velocity and (B) an

DOCKET NO.: MSFT-2872/306077.02
Application No.: 10/788,813
Office Action Dated: August 20, 2008

PATENT

acceleration associated with the input based upon data associated with recent historical interaction with the user interface control.

42. (Canceled)